Claim Listing

What I claim is:

1. (currently amended) A digital transmission system comprising:

   a. a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by a transmission matrix, said transmission matrix being comprised of non-orthogonal basis functions;

   b. a signal path,

   c. a receiver receiving a received symbol sequence, and

   d. a processing element multiplying the received symbol sequence by a recovery matrix, <u>said recovery matrix is an inverse of the transmission matrix,</u> whereby an output symbol sequence is produced.

2. (currently amended) A digital transmission system according to claim 1, wherein the transmission matrix is square ~~and the recovery matrix is the inverse of the transmission matrix~~.

3. (currently amended) A digital transmission system comprising:

   a. a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by an over-determined transmission matrix, said transmission matrix being comprised of non-orthogonal basis functions;

   b. a signal path,

   c. a receiver receiving a received symbol sequence, and

   d. a processing element multiplying the received symbol sequence by a recovery matrix, <u>said recovery matrix is a pseudo-inverse of the transmission matrix</u>, whereby an output symbol sequence is produced.

4. (canceled) ~~A digital transmission system according to claim 3, wherein the recovery matrix is a pseudo-inverse of the transmission matrix.~~

5. (currently amended) A digital transmission system according to claim 3, wherein the processing element removes redundant symbols in the received symbol sequence and a recovery matrix is created from ~~an~~ the pseudo-inverse of the transmission matrix ~~with the corresponding columns removed~~ modified by corrupted terms in the received symbol sequence.

6. (currently amended) A digital transmission system comprising:
   a. a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by a transmission matrix comprised of non-orthogonal basis functions and performing an inverse fast Fourier transform in the result;
   b. a signal path,
   c. a receiver receiving a received symbol sequence, and
   d. a processing element performing a fast Fourier transform and multiplying the received symbol sequence by a recovery matrix, said recovery matrix is s pseudo-inverse of the transmission matrix, ~~and performing a fast Fourier transform,~~ whereby an output symbol sequence is produced.

7. (original) A digital transmission system according to claim 6, wherein a guard interval is added to the transmit symbol sequence.

8. (currently amended) A digital transmission system according to claim 6, wherein the processing element removes corrupt symbols ~~and a said recovery matrix is created from an inverse of the transmission matrix with the corresponding columns removed.~~.